What is claimed is:

1. A liposome having a lipid bilayer, said lipid bilayer comprising an optically active ether lipid component, said ether lipid component being selected from the group consisting of an L-ether lipid, a D-ether lipid and an unequal mixture of an L-ether lipid and a D-ether lipid.

2. The liposome of claim 1 further comprising:

(a) an underivatized phosphatidylcholine;

(b) a sterol;

(c) about 5-20 mole % of a phosphatidylethanolamine linked to a dicarboxylic acid at the ethanolamine group of the phosphatidylethanolamine; and

(d) wherein said liposome comprises greater than about 10 mole % to less than about 30 mole % of said ether stereoisomer.

3. The liposome of claim 1, wherein said ether lipid stereoisomer is of the formula:

$$\begin{array}{l} CH_2\text{-}O\text{-}Y_1Y_2 \\ | \\ CH\text{-}Z\text{-}CH_3 \\ | \\ CH_2\text{-}O\text{-}P(O)_2\text{-}O\text{-}CH_2CH_2N(CH_3)_3, \end{array}$$

wherein Y_1 is $(CH_2)_{n1}(CH{=}CH)_{n2}(CH_2)_{n3}(CH{=}CH)_{n4}(CH_2)_{n5}(CH{=}CH)_{n6}(CH_2)_{n7}(CH{=}CH)_{n8}(CH_2)_{n9}$, the sum of n1 +2n2 +n3 +2n4 +n5 +2n6 + n7 +2n8 +n9 is an integer of from 3 to 23, n1 is zero or an integer of from 1 to 22, n3 is zero or an integer of from 1 to 19, n5 is zero or an integer of from 1 to 16, n7 is zero or an integer of from zero

to 16, n9 is zero or an integer of from 1 to 10, and each of n2, n4, n6 and 8 is independently zero or 1;

Y_2 is CH_3 or CO_2H; and

Z is oxygen or sulfur.

4. The liposome of claim 1 wherein said liposome is unilamellar and has a diameter within the range of about 50-200 nm

5. The liposome of claim 2, wherein the underivatized phosphatidylcholine is an unsaturated or partially unsaturated phosphatidylcholine.

6. The liposome of claim 5, wherein the underivatized phosphatidylcholine is dioleoyl phosphatidylcholine.

7. The liposome of claim 2, wherein the sterol is cholesterol.

8. The liposome of claim 2, wherein the phosphatidylethanolamine is selected from the group consisting of dipalmitoyl phosphatidylethanolamine, palmitoyloleoyl phosphatidylethanolamine and dioleoyl phosphatidylethanolamine.

9. The liposome of claim 8, wherein the phosphatidylethanolamine is dioleoyl phosphatidylethanolamine.

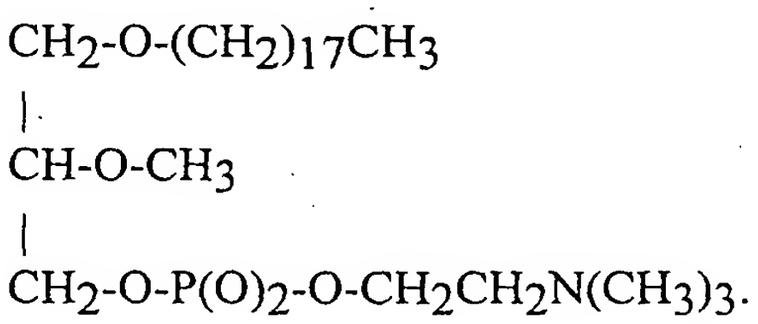
10. The liposome of claim 2, wherein the dicarboxylic acid is selected from the group consisting of glutaric acid, sebacic acid, succinic acid and tartaric acid.

11. The liposome of claim 10, wherein the dicarboxylic acid is glutaric acid.

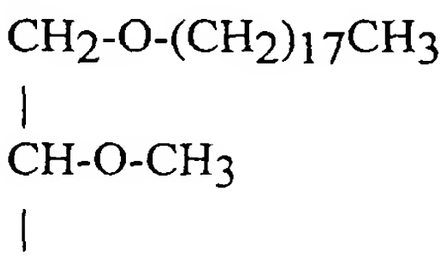
12. The liposome of claim 2, wherein the phosphatidylethanolamine is dioleoyl phosphatidylethanolamine and the dicarboxylic acid is glutaric acid.

13. The liposome of claim 3, wherein Y_2 is CH_3, Y_1 is $(CH_2)_{n1}$, and Z is O.

14. The liposome of claim 1, wherein the ether lipid has the formula:



15. The liposome of claim 2, wherein the underivatized phosphatidylcholine is dioleoyl phosphatidylcholine, the sterol is cholesterol, the phosphatidylethanolamine is dioleoyl phosphatidylethanolamine, the dicarboxylic acid is glutaric acid and the ether lipid has the formula:



CH_2-O-P(O)$_2$-O-$CH_2CH_2N(CH_3)_3$.

16. The liposome of claim 15, wherein the bilayer comprises about 20 mole percent of the ether lipid, about 10 mole percent of the phosphatidylethanolamine linked to a dicarboxylic acid, about 30 mole percent cholesterol and about 40 mole percent dioleoyl phosphatidylcholine.

17. The liposome of claim 1, comprising an additional bioactive agent.

18. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and the liposome of claim 1.

19. A method of treating a mammal afflicted with a cancer which comprises administering to the mammal an amount of the pharmaceutical composition of claim 1 comprising from about 0.1 mg of the ether lipid per kg of the body weight of the mammal to about 1000 mg per kg, wherein the cancer is selected from the group consisting of lung cancers, brain cancers, colon cancers, ovarian cancers, breast cancers, leukemias, lymphomas, sarcomas and carcinomas.

20. The method of claim 19, comprising administering to the mammal an additional biologically active agent.

21. The method of claim 20, wherein the additional agent is selected from the group consisting of antineoplastic agents, antimicrobial agents, and hematopoietic cell growth stimulating agents.

22. The method of claim 19, wherein the liposome is a unilamellar liposome having a diameter of from about 50 nm to about 200 nm.